

Water Supply Outlook



Interstate Commission on the Potomac River Basin (ICPRB)

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The ICPRB, through its Section for Cooperative Water Supply Operations on the Potomac (CO-OP), coordinates water supply operations during times of drought and recommends releases of stored water. These operations ensure adequate water supplies for Washington metropolitan area water users and for environmental flow levels. The water supply outlooks are published by CO-OP on a monthly basis between April and October. They are meant to provide an update on the possibility of low-flow conditions in the Potomac basin.

Summary/Conclusions

The probability of releases from backup water supply reservoirs in the Washington metropolitan area during the summer and fall seasons of 2024 is currently below normal. The use of Jennings Randolph and Little Seneca reservoirs is generally triggered by low flows brought about by a combination of low summer precipitation and low groundwater levels. Streamflow is currently near normal, and groundwater levels are mostly normal. The Potomac basin upstream of Washington, D.C. received 4.3 inches of precipitation for the month of May, which is 0.2 inches above normal. As of May 31, the 12-month cumulative basin precipitation is 0.5 inches below normal. The Middle Atlantic River Forecast Center (MARFC) anticipates no water supply shortages within the Mid-Atlantic region over the next couple of months, assuming continuation of near normal precipitation. At present, there is sufficient flow in the Potomac River to meet the Washington metropolitan area's water demands without releasing water from upstream reservoirs. If low-flow conditions develop, the Washington metropolitan area is protected from a water supply shortage owing to carefully designed drought-contingency plans.

ICPRB's Low Flow Outlook

There is a 5 to 11 percent conditional probability that natural Potomac flow will drop below 600 to 700 million gallons per day (MGD) at Little Falls through December 31 of this year; at these flow levels, water supply releases from Jennings Randolph and Little Seneca reservoirs may occur. Releases occur when predicted flow is less than demand plus a required environmental flow-by. Drinking water demand ranges from 400 to 700 MGD during the summer months and the minimum flow-by at Little Falls is 100 MGD. Note that natural flow is defined as observed flow at the Little Falls gage plus total Washington metropolitan Potomac withdrawals, with an adjustment made to remove the effect of North Branch reservoir releases on stream flow.

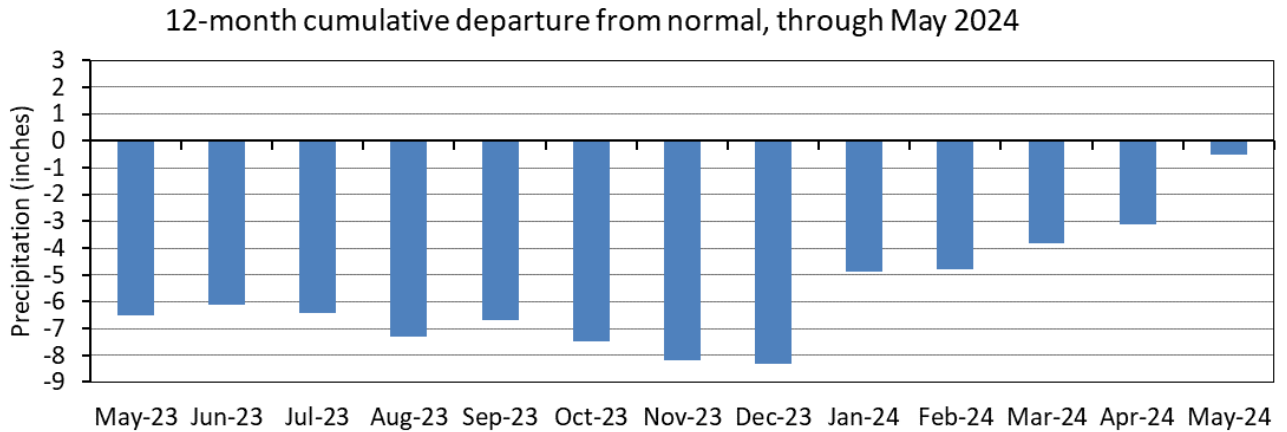
The conditional probability is estimated by analyzing the historical stream flow records and considering recent stream flow values, precipitation totals for the prior 12 months, current groundwater levels, and the current Palmer Drought Index. Past years in which watershed conditions most closely resemble current conditions are weighted more heavily in the determination of conditional probability. The historical, or unconditional, probability is based on an analysis of the historical record without weighing for current conditions. The 5 to 11 percent conditional probability compares to the 8 to 15 percent historical probability and is considered the more reliable indicator.

Outlook for natural Potomac River flow at Little Falls – Watershed conditions as of June 1, 2024

Low flow threshold (MGD)	Low flow threshold (cfs)	Historical probability of lower flow June 1 through December 31	Conditional probability of lower flow June 1 through December 31
1200	1858	68%	68%
1000	1548	49%	49%
800	1238	25%	22%
700	1084	15%	11%
600	929	8%	5%

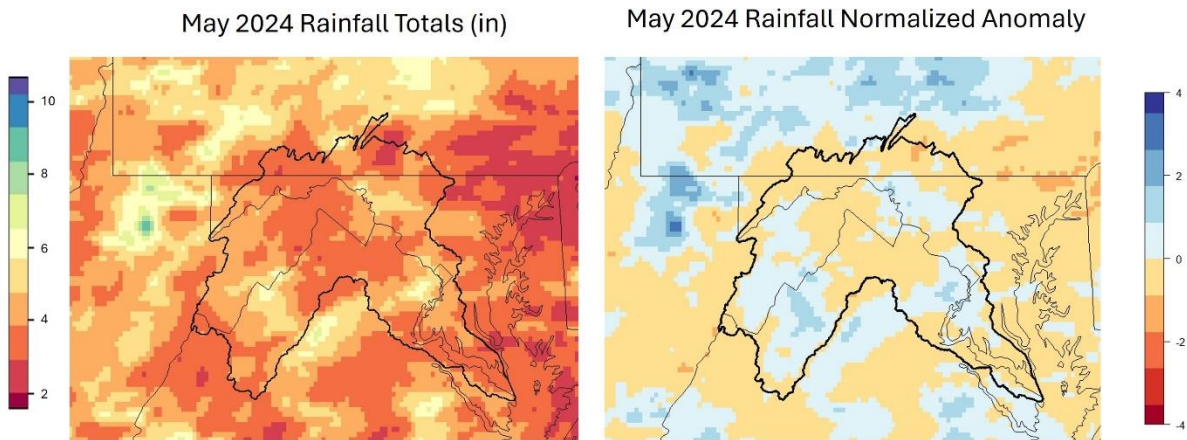
Past Precipitation

Data from the National Weather Service’s Middle Atlantic River Forecast Center (MARFC) shows that the Potomac basin upstream of Washington, D.C. has received 4.3 inches of precipitation for the month of May, which is 0.2 inches above normal. The 12-month cumulative basin precipitation is 0.5 inches below normal as of May 31 (see graph below).



Source: Middle Atlantic River Forecast Center, National Weather Service

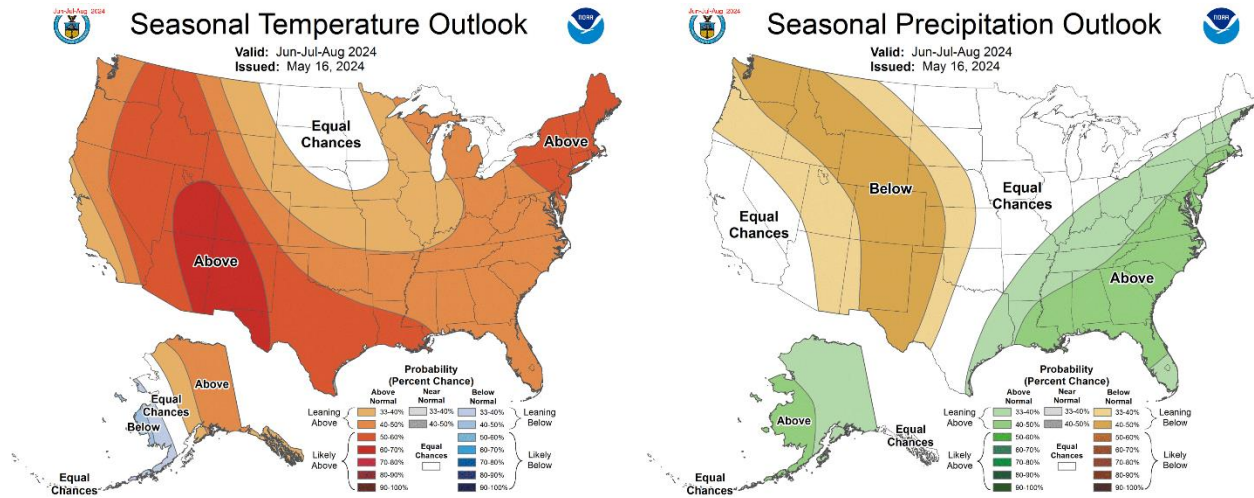
The maps below illustrate the spatial variability of rainfall over the Potomac Basin in May based on PRISM (Parameter-elevation Regressions on Independent Slopes Model). Normalized rainfall anomaly, indicating departure from normal conditions, reveals that rainfall was normal to slightly above normal across the basin.



Source: PRISM Climate Group, Oregon State University, <https://prism.oregonstate.edu>

Precipitation and Drought Outlook for June, July, and August 2024

The Climate Prediction Center's June outlook calls for normal temperatures and normal precipitation in the Potomac Basin. The 90-day outlook (June-August) calls for above-normal temperatures and precipitation. The Middle Atlantic River Forecast Center (MARFC) anticipates no water supply shortages within the Mid-Atlantic region over the next couple of months, assuming continuation of near normal precipitation.

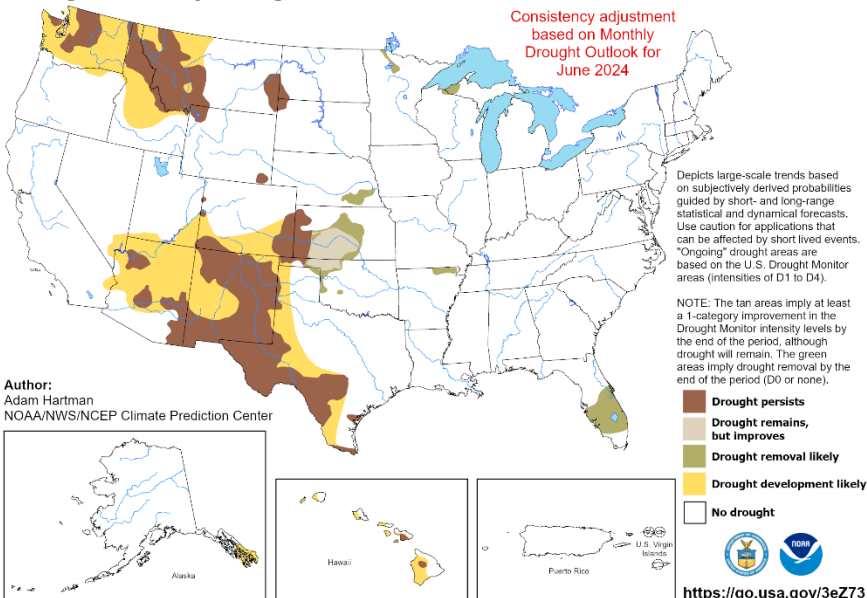


The Climate Prediction Center's U.S. Seasonal Drought Outlook, as of May 31, 2024, indicates no drought development in the Potomac Basin over the coming months.

U.S. Seasonal Drought Outlook

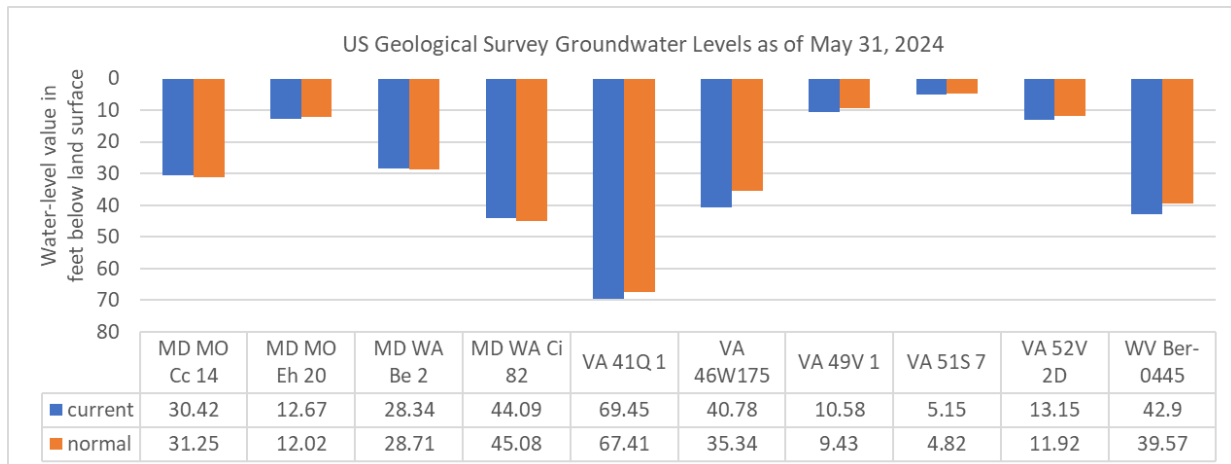
Drought Tendency During the Valid Period

Valid for June 1 - August 31, 2024
Released May 31, 2024



Groundwater – Current Conditions

Based on U.S. Geological Survey (USGS) data, the depth to groundwater level (measured in feet) for ten wells in the ICPRB water supply outlook shows mostly near normal depths, as depicted in the graph below, displaying current and normal groundwater levels for May.



Reservoir Storage – Current Conditions

There have been no water supply releases from the CO-OP shared system so far this year.

Reservoir storage as of June 5, 2024

Facility	Percent Full	Current usable storage, BG	Total usable capacity, BG
WSSC Water's Patuxent reservoirs ¹	100	10.5	10.5
Fairfax Water's Occoquan Reservoir ²	100	8.2	8.2
Little Seneca Reservoir ³	99	3.8	3.9
Jennings Randolph water supply ⁴	100	13.1	13.1
Jennings Randolph water quality ⁴	96	15.6	16.3
Savage Reservoir ⁵	83	5.2	6.3

¹ Bathymetric study conducted December 2015 with revisions in December 2016, and unusable storage corrected June 2017.

² Bathymetric study conducted in 2019.

³ Usable capacity consistent with Ortt, *et al.* (2011).

⁴ 2013 revised stage-storage curve provided by Bill Haines, US Army Corps of Engineers, Baltimore District.

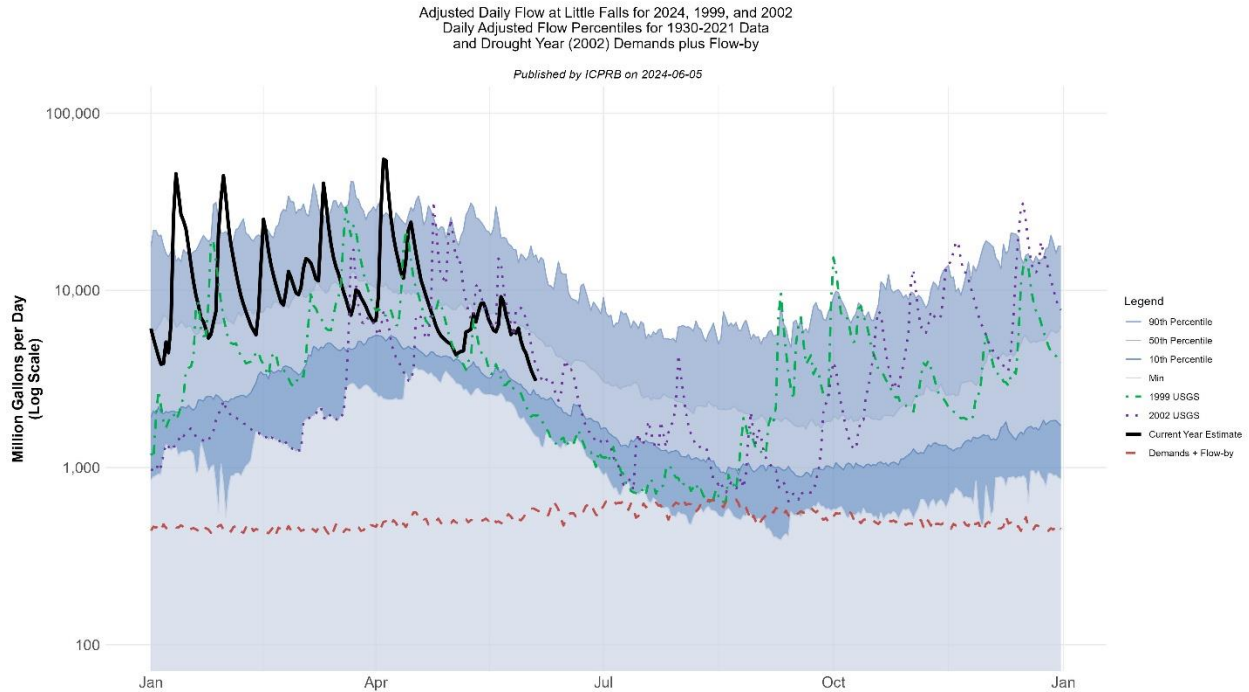
⁵ 1998 revised stage-storage curve provided by Bill Haines, US Army Corps of Engineers, Baltimore District.

Potomac River Flow

The estimated adjusted Potomac flow at Little Falls on June 1 was 3.9 billion gallons per day (BGD). For this day of the year, this value was below the 50th percentile flow value of 6.1 BGD and above the 10th percentile flow value of 2.6 BGD. Adjusted flow, shown in the figure below, is the flow that would occur in the absence of major Washington metropolitan area withdrawals, but includes releases from upstream reservoirs. Adjusted flow averaged 12.5 BGD for the past five months and 6.2 BGD in May.

Environmental Flow-by

The average observed Potomac flow at Little Falls in June was well above the minimum recommendation of 100 MGD.



Adjusted flow represents the natural flow that would occur in the absence of major withdrawals. The USGS publishes adjusted flow data for Little Falls based on actual withdrawals reported by the CO-OP utilities and Loudoun Water. However, the USGS data may not always be available in time for the outlook. In such cases, ICPRB estimates the adjusted flow using a 20-day rolling average of past withdrawal data or observed data collected from the utilities.

Drought Status

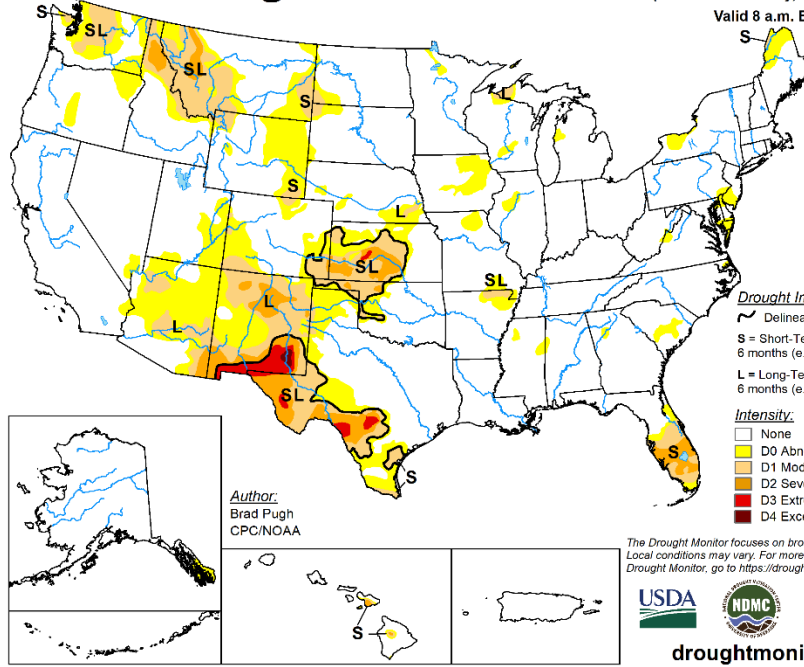
The drought status in [Maryland](#), [Pennsylvania](#), and [Virginia](#) are normal. The current drought stage, as defined in the Metropolitan Washington Council of Governments (MWCOG)'s water supply and drought response awareness plan, is normal.

Drought Monitor and Soil Moisture

The U.S. Drought Monitor map by the NOAA Climate Prediction Center (refer to the first figure on the next page) shows no drought conditions are present in the Potomac Basin. Abnormally dry conditions are present in a small area within the southwestern corner of the basin. The Palmer Drought Severity Index by Division map (refer to the second figure on the next page) indicates normal to unusually moist conditions.

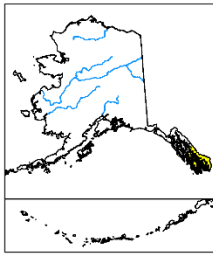
U.S. Drought Monitor

June 4, 2024
 (Released Thursday, Jun. 6, 2024)
 Valid 8 a.m. EDT



Drought Impact Types:
 ~ Delineates dominant impacts
 S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
 L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:
 None
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

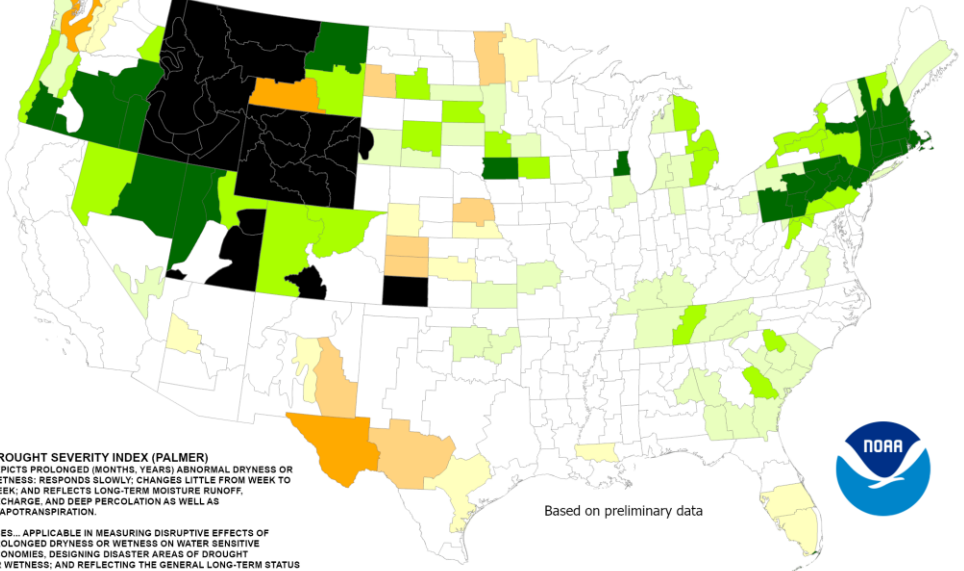


Author:
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 CPC/NOAA

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



Drought Severity Index by Division Weekly Value for Period Ending Jun 01, 2024 Long Term Palmer



DROUGHT SEVERITY INDEX (PALMER)
 DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS; RESPONDS SLOWLY; CHANGES LITTLE FROM WEEK TO WEEK; AND REFLECTS LONG-TERM MOISTURE RUNOFF, RECHARGE AND DEEP PERCOLATION AS WELL AS EVAPOTRANSPIRATION.

USES... APPLICABLE IN MEASURING DISRUPTIVE EFFECTS OF PROLONGED DRYNESS OR WETNESS ON WATER SENSITIVE ECONOMIES; DESIGNING DISASTER AREAS OF DROUGHT OR WETNESS; AND REFLECTING THE GENERAL LONG-TERM STATUS OF WATER SUPPLIES IN AQUIFERS, RESERVOIRS AND STREAMS.

LIMITATIONS... IS NOT GENERALLY INDICATIVE OF SHORT-TERM (FEW WEEKS) STATUS OF DROUGHT OR WETNESS SUCH AS FREQUENTLY AFFECTS CROPS AND FIELD OPERATIONS (THIS IS INDICATED BY THE CROP MOISTURE INDEX).

Based on preliminary data

■ -4.0 or less (Extreme Drought) ■ +2.0 to +2.9 (Unusual Moist Spell)
■ -3.0 to -3.9 (Severe Drought) ■ +3.0 to +3.9 (Very Moist Spell)
■ -2.0 to -2.9 (Moderate Drought) ■ +4.0 and above (Extremely Moist)
■ -1.9 to +1.9 (Near Normal) ■ Missing/Incomplete

